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WEATHER  
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# January - March 2022 Outlook: Perspective for the Lower Rio Grande Valley/Deep S. Texas Region

December 17, 2021

Barry Goldsmith, NWS Brownsville/Rio Grande Valley, Texas



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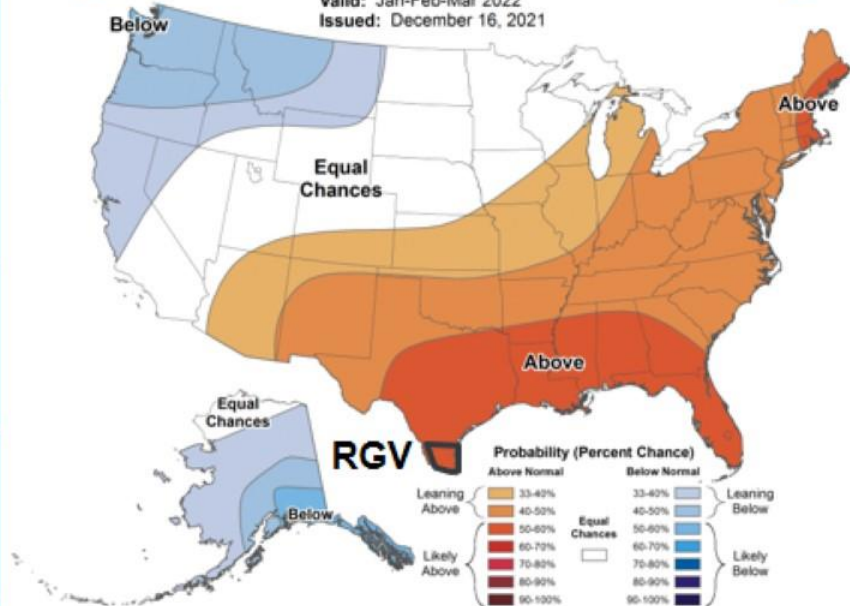
# Seasonal Forecast - USA



## Seasonal Temperature Outlook



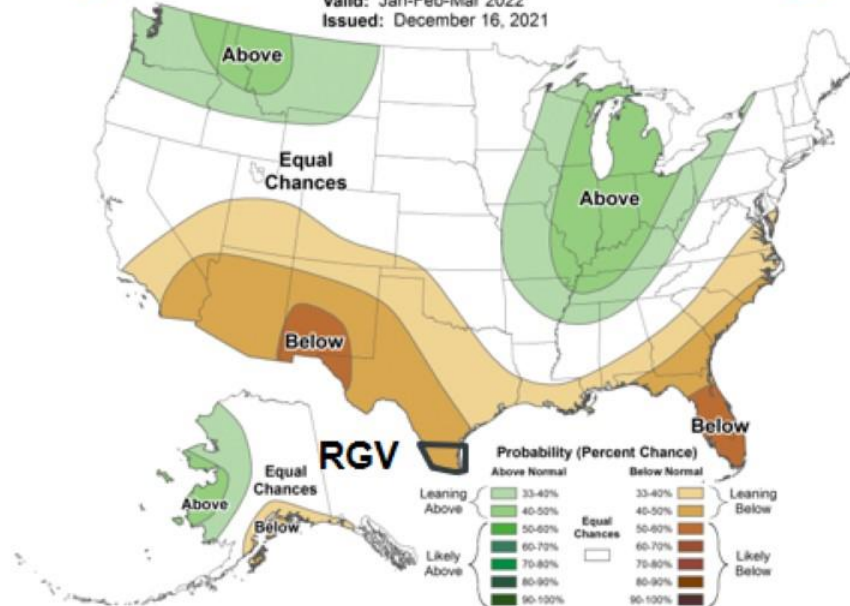
Valid: Jan-Feb-Mar 2022  
Issued: December 16, 2021



## Seasonal Precipitation Outlook



Valid: Jan-Feb-Mar 2022  
Issued: December 16, 2021





# Key Takeaways

- Above to much above average temperatures, and below average precipitation is forecast...like the forecast a year ago
- Should this forecast become reality:
  - **Drought** should redevelop and **worsen by the end of February into March**. A likelihood of severe to exceptional (level 2/3) drought across parts of the Rio Grande Plains, Brush Country, and “upper” Valley
  - **Municipal and Agricultural water shortages** could become an issue by spring as Falcon Reservoir may drop to its **lowest values in more than 30 years**.
  - **Several freezes are possible** despite the warm/dry forecast, based on occasional atmospheric pattern shifts that would allow polar air to plunge into Texas. *It remains impossible to predict if a repeat of February 2021 will occur.*
  - **Wildfire spread threat will gradually increase through the season**, based on the availability of fuels including grass, brush, and trees – and the expected warmth and drought.

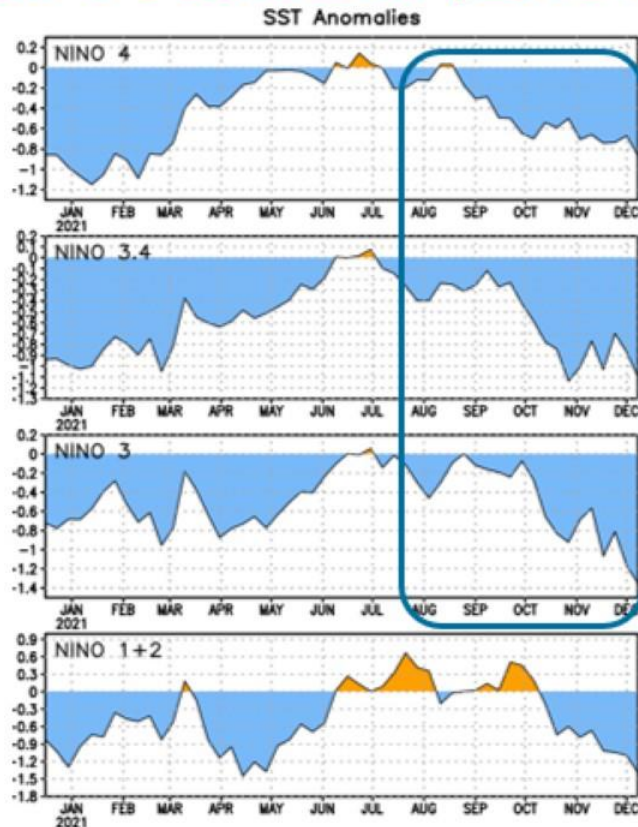




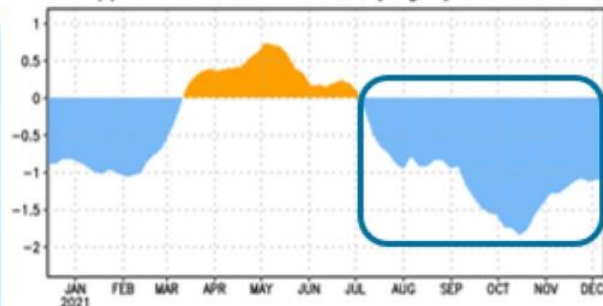


# The “Why” of the Forecast: El Niño/Southern Oscillation (ENSO) in La Niña Phase

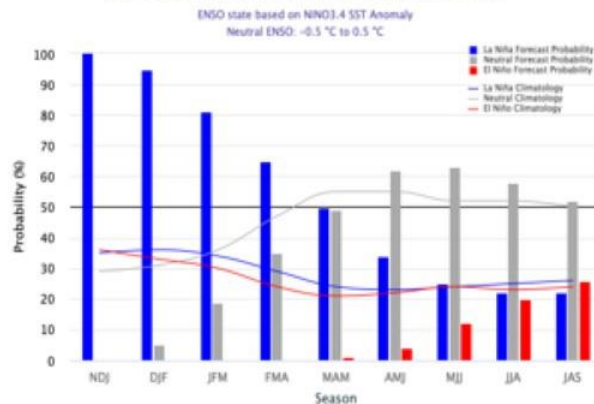
- La Niña is entrenched (blue colored areas and bar chart, right) and should remain so into March
- Persistent warmth over several years in the southwest U.S./northern Mexico is expected to continue into early 2022



EQ. Upper-Ocean Heat Anoms. (deg C) for 180–100W



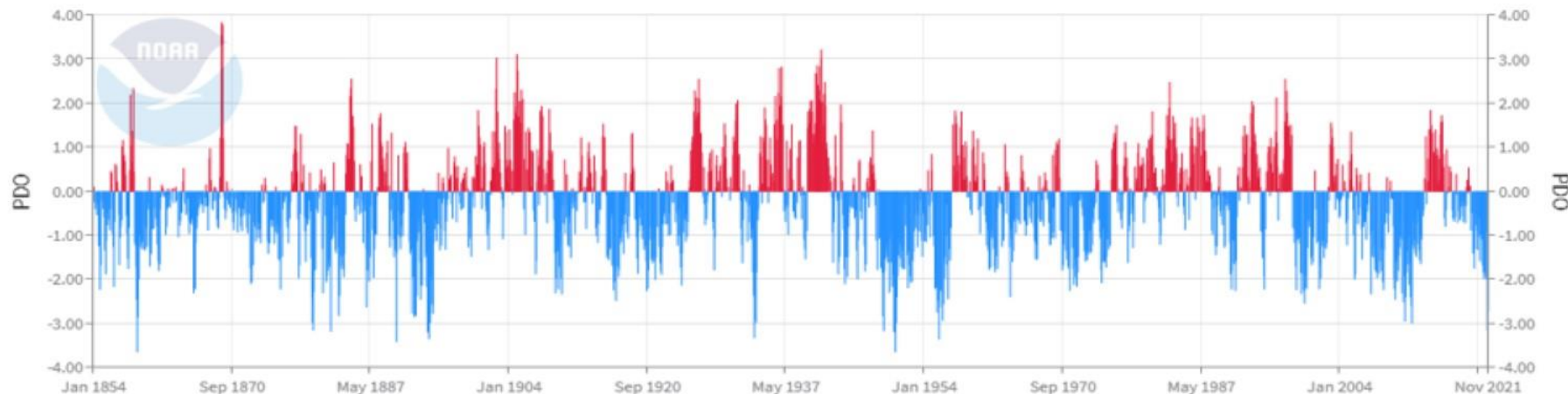
Early-December 2021 CPC/IRI Official Probabilistic ENSO Forecasts





# The “Why” of the Forecast: Pacific-Decadal Oscillation (PDO) in Negative Phase

## Pacific Decadal Oscillation (PDO)



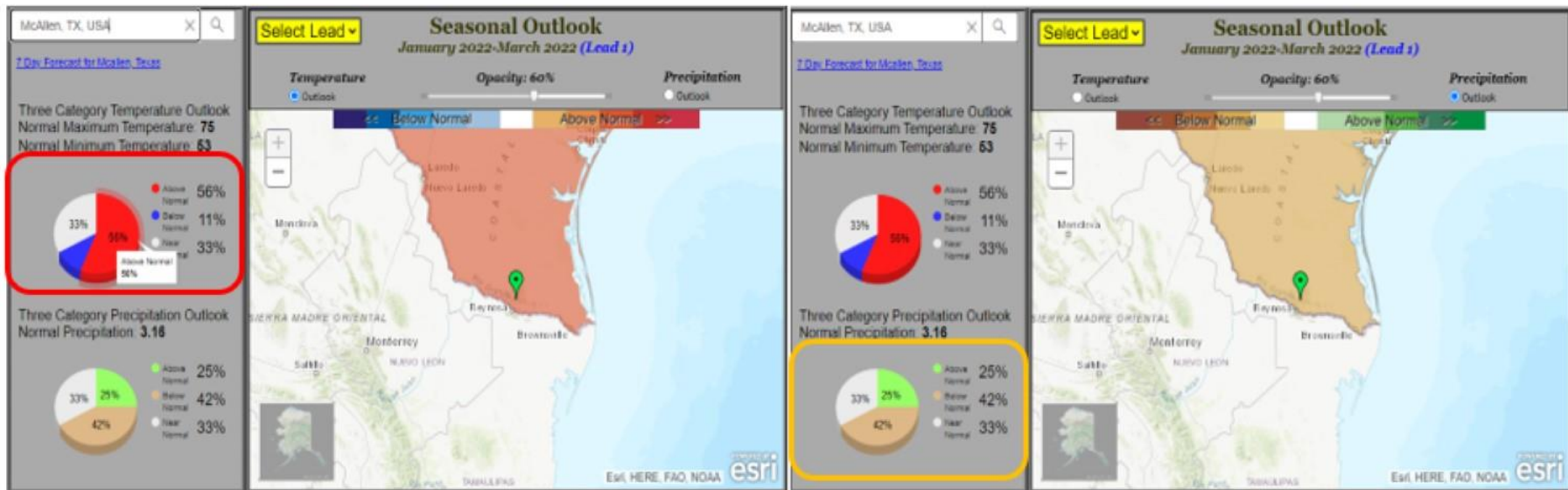
Source: <https://www.ncei.noaa.gov/pub/data/cmb/ersst/v5/index/ersst.v5.pdo.dat>

- Past negative PDOs featured both warmer than average temperatures, and freezes and freezing/frozen precipitation events. La Niña combined with negative PDO has come correlation to each, but more definitively favors a **drier than average** mid to late winter/early spring.
- Significant freeze/wintry precipitation events included: Dec. 1989 (-0.1); Feb. 2011 (-1.46), Jan. 2014 (-0.56); Feb. 2021 (-1.09).





# The January-March Outlook: Rio Grande Valley (McAllen as Anchor Point)



- Temperature: A 56 percent chance of above average. RGV averages: Afternoons: 72 (January) Rising to 82-86 (end of March). Mornings: 48-53 (January) rising to 60-65 (end of March)
- Precipitation: A 42 percent chance of below average. Seasonal average: 2.75 to 4.25 inches of rainfall
- For each: Probability of the opposite (cooler and wetter) is 25 percent or less (lowest for temperature)



# 2021 Temperatures, Ranked Values

## Maximum 350-Day Mean Avg Temperature for Brownsville Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Dates	Missing Days
1	77.9	2012-01-02 through 2012-12-16	0
2	77.8	2012-01-01 through 2012-12-15	0
3	77.8	2020-01-01 through 2020-12-15	0
4	77.7	2020-01-02 through 2020-12-16	0
5	77.7	2017-01-01 through 2017-12-16	0
6	77.3	2019-01-01 through 2019-12-16	0
7	76.9	2018-01-01 through 2018-12-16	0
8	76.8	2016-01-02 through 2016-12-16	0
9	76.7	2011-01-01 through 2011-12-16	0
10	76.7	2016-01-01 through 2016-12-15	0
11	76.6	1902-01-01 through 1902-12-16	46
12	76.6	2021-01-01 through 2021-12-16	1
13	76.6	2006-01-01 through 2006-12-16	0

## Maximum 350-Day Mean Avg Temperature for McAllen Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

15	77.5	2006-01-01 through 2006-12-16	0
16	77.5	2000-01-01 through 2000-12-15	3
17	77.4	2000-01-02 through 2000-12-16	3
18	77.1	1950-01-01 through 1950-12-16	0
19	77.0	2005-01-01 through 2005-12-16	0
20	77.0	1994-01-01 through 1994-12-16	0
21	77.0	1995-01-01 through 1995-12-16	6
22	77.0	2015-01-01 through 2015-12-16	0
23	76.7	1986-01-01 through 1986-12-16	0
24	76.7	2021-01-01 through 2021-12-16	1
25	76.6	1991-01-01 through 1991-12-16	1
26	76.6	1996-01-01 through 1996-12-15	2
27	76.5	1945-01-01 through 1945-12-16	7

## Maximum 350-Day Mean Avg Temperature for HARLINGEN, TX

Click column heading to sort ascending, click again to sort descending.

12	76.8	1927-01-02 through 1927-12-17	1
13	76.7	1957-01-02 through 1957-12-17	10
14	76.6	1953-01-02 through 1953-12-17	4
15	76.6	1956-01-02 through 1956-12-16	31
16	76.6	1956-01-03 through 1956-12-17	31
17	76.4	1998-01-02 through 1998-12-17	11
18	76.4	2006-01-02 through 2006-12-17	11
19	76.3	2021-01-02 through 2021-12-17	7
20	76.2	1933-01-02 through 1933-12-17	2
21	76.0	2000-01-02 through 2000-12-16	17
22	75.9	1954-01-02 through 1954-12-17	0

\*Leap years appear twice (2020, 2016, 2012, 2000 1956)

- Rio Grande Valley “anchor” cities: A much warmer than average autumn into December has moved the rankings up; Brownsville likely to crack top ten for eighth of past ten years!
- Combination of [mid-February 2021 freeze](#), a wetter than average May-July, and lack of summer searing heat wave played a role in keeping temperatures down – a little bit – compared with recent years.





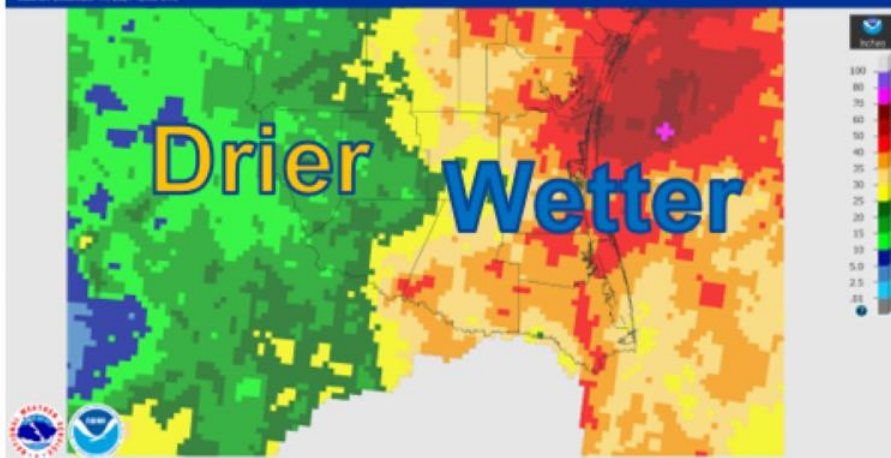


# 2021 Rainfall So Far: Wet for all but Starr/Jim Hogg/Zapata



December 17, 2021 Year to Date Observed Precipitation

Created on December 17, 2021 - 10:53 UTC  
Valid on December 17, 2021 10:53 UTC



December 17, 2021 Year to Date Percent Precipitation

Created on December 17, 2021 - 10:53 UTC  
Valid on December 17, 2021 10:53 UTC



**Observed: January 1 – December 16, 2021**

**Percent of Average: January 1 – December 16, 2021**

Rio Grande Valley “anchor” locations have been wetter than average for 2021 (and near record since May 1):

**Brownsville (1878):** 38.48” (14<sup>th</sup>; record 59.37 in 1886). Since May 1: 34.52” (6<sup>th</sup>; record 54.97 in 1887)

**McAllen (1942):** 32.15” (7<sup>th</sup>; record 37.17 in 1966). Since May 1: 30.21” (1<sup>st</sup>; prior record 29.44 in 1976)

**Harlingen (1912):** 39.26 (7<sup>th</sup>; record 44.50 in 1976). Since May 1: 37.17 (2<sup>nd</sup>; prior record 39.35 in 1933)

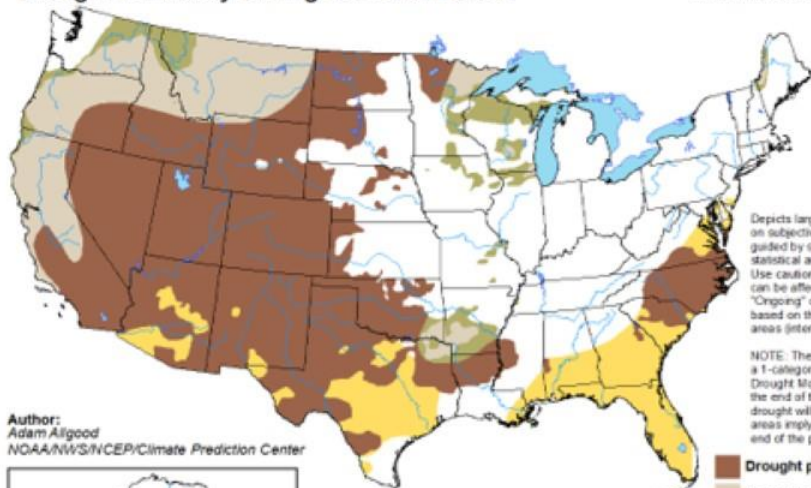




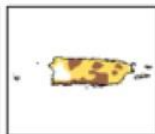
# The January-March “Droughtlook”

## U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for December 16, 2021 - March 31, 2022  
Released December 16, 2021



Author:  
Adam Algood  
NOAA/NWS/NCEP/Climate Prediction Center



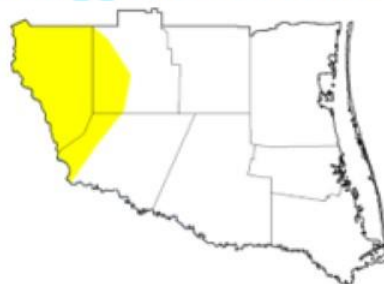
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short-lived events. “Ongoing” drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

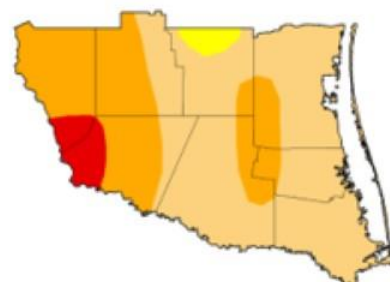
Drought persists  
Drought remains but improves  
Drought removal likely  
Drought development likely



<http://go.usa.gov/3eZ73>



Dec. 14, 2021



Dec. 15, 2020



Mar. 30, 2021

### Drought Classification

None  
D0 (Abnormally Dry)  
D1 (Moderate Drought)  
D2 (Severe Drought)  
D3 (Extreme Drought)  
D4 (Exceptional Drought)  
No Data

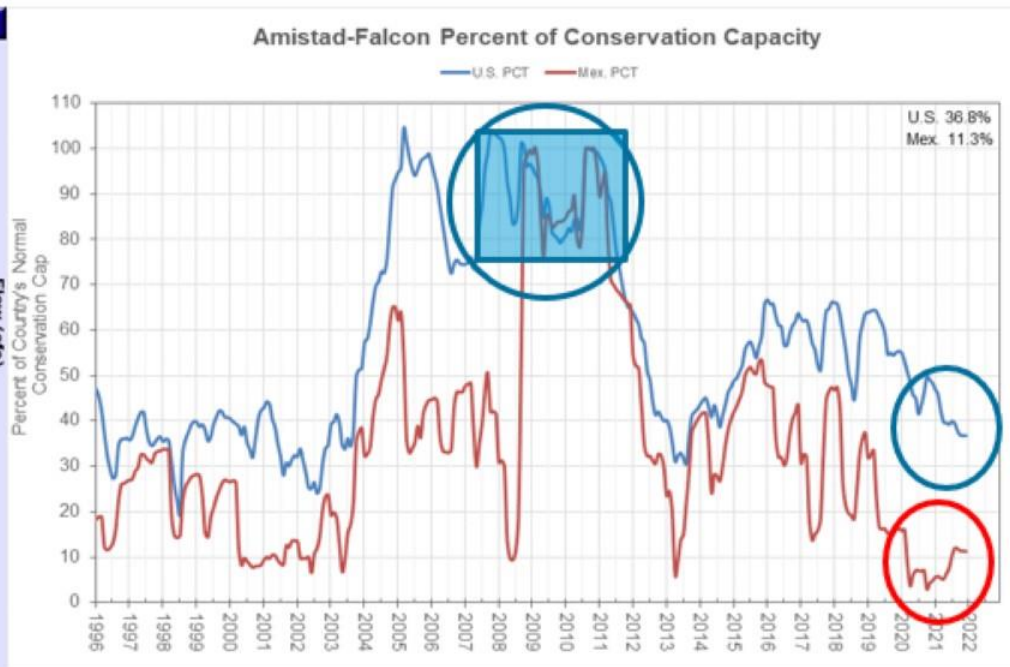
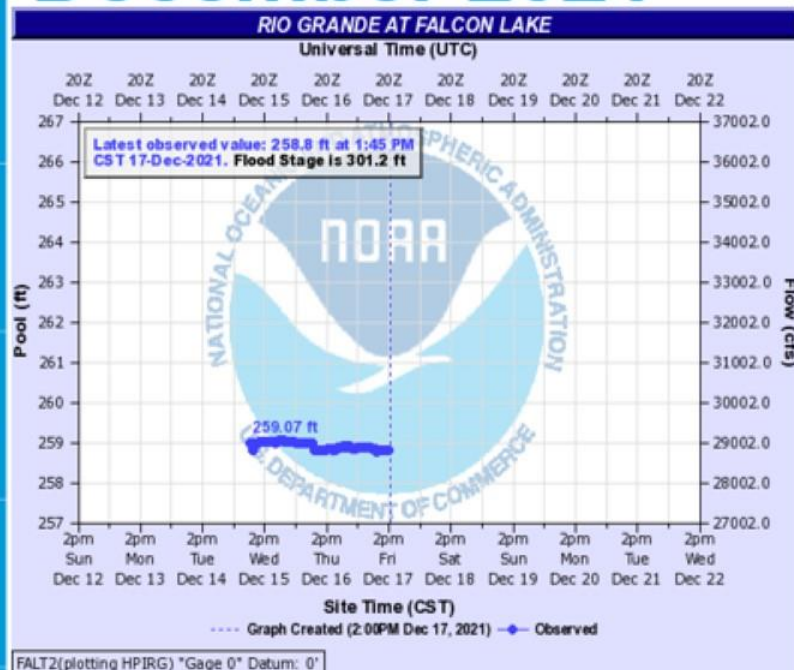
- Given the wetter start to January 2022, there is **little chance for widespread extreme/exceptional** drought by end of March as there was in 2021 (above right)...
- ...but, the dry and warm/hot forecast into March suggest potential for **moderate to severe/extreme** conditions to develop across areas along/west of IH-69C.



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# Falcon Reservoir Near 30-Year Lows in December 2021



November 2021 total capacity, Falcon Reservoir: **16 percent**

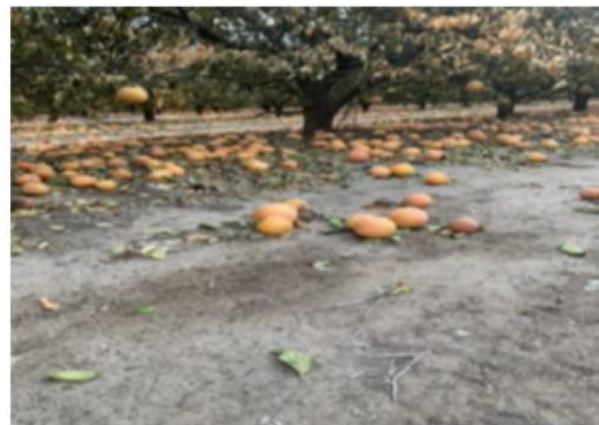
November 2010 total capacity, Falcon Reservoir: **106 percent**







# Freeze(s) a Wild Card?



**Records...Shattered! (Feb. 15, 2021)**

Brownsville/Rio Grande Valley, TX

Location (records since)	Preliminary New Record	Prior Record [year]	Difference
Brownsville (1878)	22*	25 (1895)	-3
McAllen (1941)	22	35 (1944)	-13
La Joya/Mission (1911)	21	33 (1951)	-12
Raymondville (1913)	21	32 (1963)	-11
Rio Grande City (1897)	20	25 (1963)	-5
Falfurrias (1908)	16	26 (1963)	-10
Edinburg (2000)	22	38 (2004)	-16
Port Mansfield (1958)	21	36 (1963)	-15
McCook (1942)	20	31 (1963)	-13
San Manuel (2000)	20	37 (2010)	-17
Santa Rosa (1987)	23	36 (1997)	-13

Notes: These are preliminary values and subject to change with quality control.  
\* Based on cooperative site measurement in place of automated sensor.

February, 2011

January 2014

February, 2021

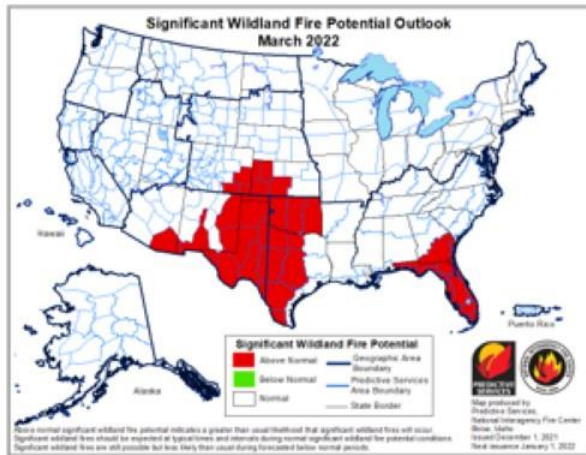
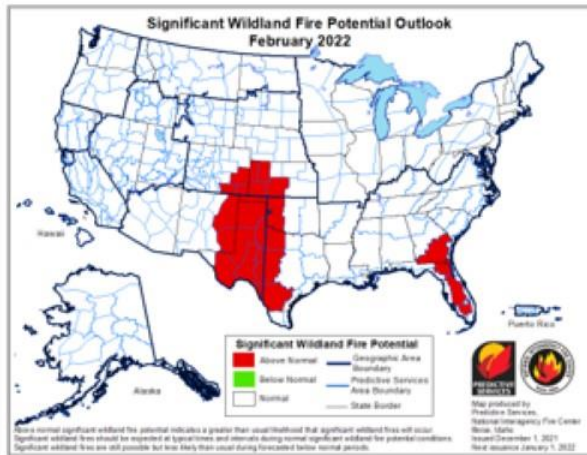


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# Wildfire Spread Potential May Build into 2022



- Early to Mid Autumn, December rains across the Rio Grande Valley are keeping fuels moist...
- But mild to warm weather is allowing additional growth in December, a potential contributor to additional fuel loading by early spring
- 1-hour fuels (grasses) can dry out rapidly following “dry” fronts. 10-1000 hour fuels (brush and timber) could turn from moist to dry by late winter and early spring 2022, and be “tinder” for rapid wildfire spread. Favored areas would be west of IH-69C/US 281 from western Brooks/Hidalgo County through Zapata County.





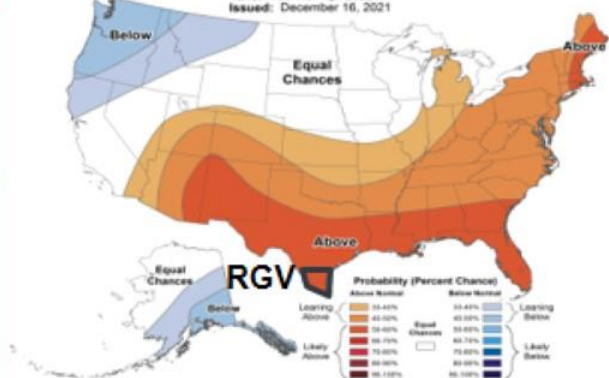


# Spring/early summer 2022: More of the Same?



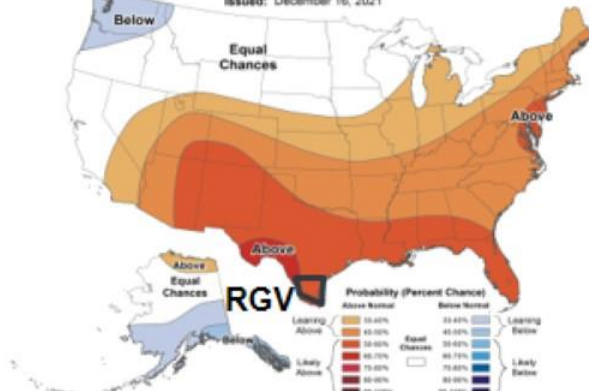
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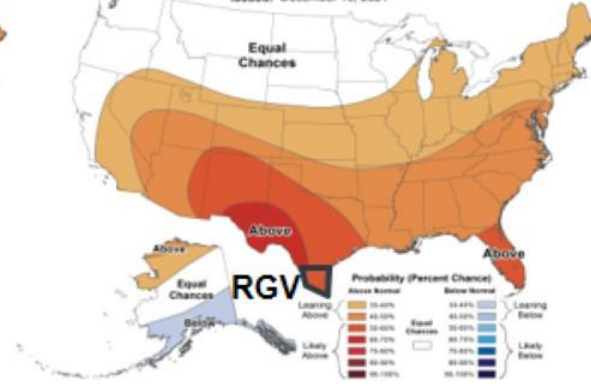
## Seasonal Temperature Outlook

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Issued: December 16, 2021



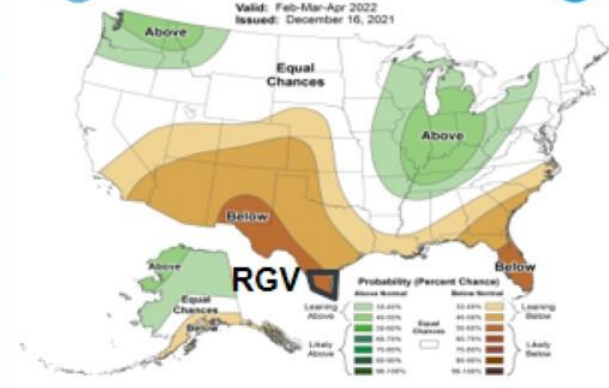
## Seasonal Temperature Outlook

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Issued: December 16, 2021



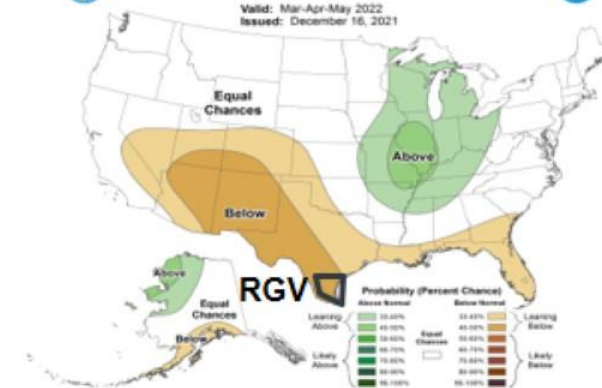
## Seasonal Precipitation Outlook

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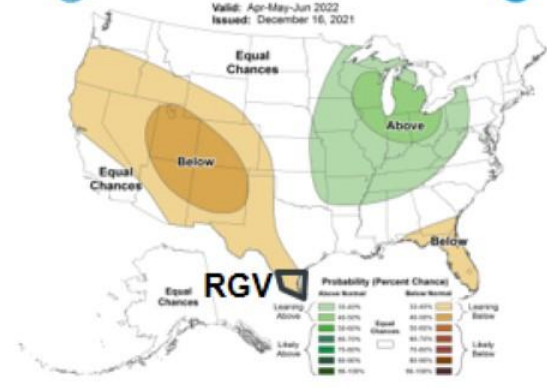
## Seasonal Precipitation Outlook

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## Seasonal Precipitation Outlook

Valid: Apr-May-Jun 2022  
Issued: December 16, 2021





# Final Thoughts

- **Worsening drought by late winter and especially spring 2022** remains a primary concern, but confidence has decreased on late winter levels based on November/December rains. Still, now is the time to look at agriculture and municipal water plans in case of shortages, especially from **Hidalgo/Brooks County to Zapata**, along/west of IH-69C/US 281.
- **Wildfire growth and spread is a concern** based on this forecast by the end of February and especially march, based on continued fuel growth (warm/humid December) followed by fuel “loading” in drier/warmer weather. Any freeze-cured brush/grass would increase the “dead” fuel load.
- The potential for **embedded freezes** requires a review of road treatment plans, as well as **agricultural protection and community plans for the power grid and four P's (people, pets, pipes, plants)**. **We are not explicitly forecasting a repeat of February 2021.** But keep it on the “back burner” of preparedness.

